

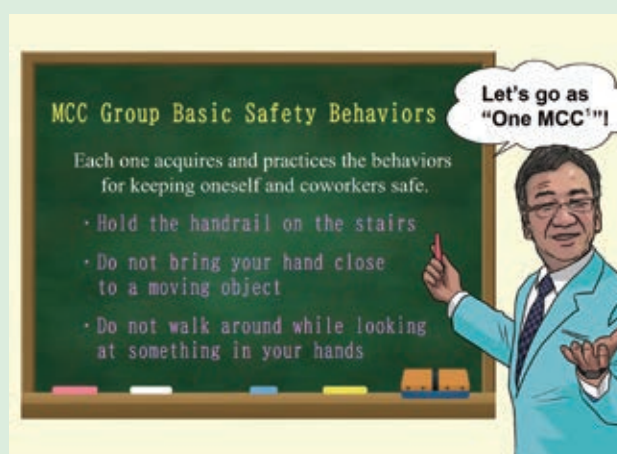
Process Safety and Disaster Prevention, Occupational Safety and Health

Basic Policy

Mitsubishi Chemical (MCC) creates action plans comprising annual targets, annual policies, and key measures reflecting the status of activities and results of the previous fiscal year and uses said plans to carry out process safety and disaster prevention and occupational safety and health activities. In fiscal 2019, we implemented activities in line with the annual goals of zero serious process safety incidents and zero serious occupational accidents as well as the annual policy of precisely understanding workplace weaknesses and steadily making improvements.

Focus The MCC Group Basic Safety Behaviors Initiatives

The MCC Group established the MCC Group Basic Safety Behaviors and began initiatives to ensure that employees know and consistently practice them in order to prevent employee behavior-related accidents throughout the global Group. The three basic behaviors were drafted based on opinions solicited from our 40,000 employees around the world. Under these initiatives, employees not only work to carry out the basic behaviors themselves, but remind one another and raise each other's awareness in order to prevent occupational accidents at the organizational level.



The MCC Group Basic Safety Behaviors

1 One MCC: A slogan for bidirectional globalization efforts aimed at becoming a truly global Group and Group-wide cross-border initiatives



Process Safety and Disaster Prevention, Occupational Safety and Health

Preventing Process Safety Incidents and Occupational Accidents, Key Measures

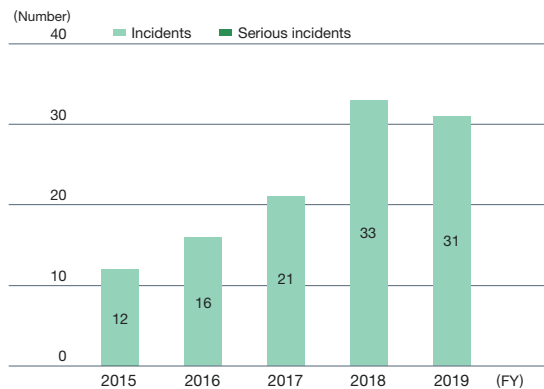
In fiscal 2019, there were 25 incidents, including small fires and leaks of hazardous materials, as well as six chlorofluorocarbon gas leak incidents.

The main causes of the incidents were the corrosion and degradation of facilities and insufficient checking during facility inspections and operations. Behind these factors, were management problems, including delays in response to facility aging, insufficient knowledge and insufficient education.

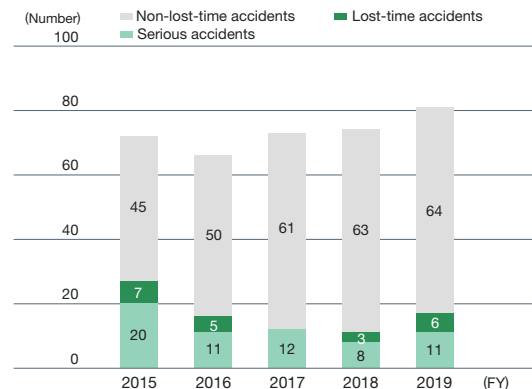
In fiscal 2019, 11 serious occupational accidents resulting in four or more days of lost work occurred in Japan. These accidents included such incidents as getting caught or entangled in machinery and falls on level surfaces and from high places. The main causes of these occupational accidents were lack of competency in basic practices and operations, inadequacies in work procedures and inadequacies in structure design and management. Behind these factors were management problems, including insufficient education and training, insufficient safety activities, and insufficient risk assessment.

Due to a focus on countermeasures to accidents related to being caught and entangled in equipment, which often lead to severe occupational injuries that result in lasting physical impairment, such accidents decreased. However, instances of falls on level surfaces and heat stroke have been increasing, and overall occupational accidents did not decrease. We will continue striving to reduce the occurrence of occupational accidents.

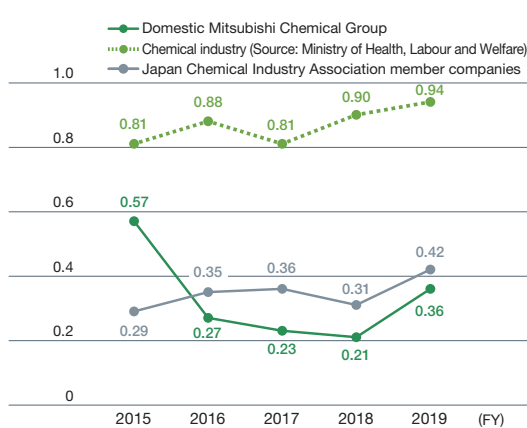
Mitsubishi Chemical Group Process Safety Incidents in Japan



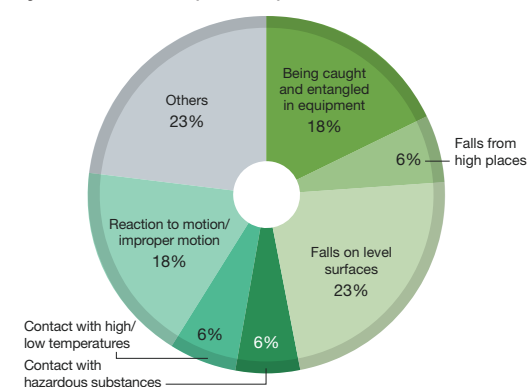
Mitsubishi Chemical Group Occupational Accidents in Japan



Annual Rate of Lost-Time Accidents



Mitsubishi Chemical Group Lost-Time Accidents by Classification (FY2019)



* Data for fiscal 2016 and earlier are the totals of the figures for the previous Mitsubishi Chemical, Mitsubishi Plastics and Mitsubishi Rayon and their respective domestic group companies. The same applies hereinafter.

* The figure for chlorofluorocarbon gas leak incidents represents leaks from refrigeration equipment with a capacity of 20 refrigeration tons or greater.

In light of the problems underlying these process safety incidents and occupational accidents, in fiscal 2020, we are implementing the following key measures.

- **Thoroughness and Continuation of Safety Activities**

In addition to efforts to thoroughly ensure safe basic practices and operations, we are reviewing and working to ensure adherence to proper procedures and safety equipment use in construction and other operations, steadily implementing change management and risk assessment, thoroughly responding to incidents and occupational accidents, and effectively utilizing information to prevent the recurrence of incidents and occupational accidents as well as the occurrence of similar incidents and accidents.

- **Thoroughness and Continuation of Facility Management**

To prevent incidents and occupational accidents, we properly inspect facilities for age-related deterioration and repair and replace them as needed while steadily performing regular monitoring to ensure that signs of irregularities in facilities are quickly detected and dealt with appropriately.

- **Human Resources Training**

We strive to train people who can think for themselves, have good judgment, and take action. For inexperienced employees, we carry out education on not only operational procedures, but also on adhering to basic safety behaviors and operations and rules about prohibited behaviors. Furthermore, to enhance risk assessments, we are proactively developing human resources with specialized risk assessment knowledge and skills.

- **Accident and Natural Disaster Response**

To minimize and contain harm in the event of an accident or natural disaster, such as an earthquake, we have in place systems for rapid response within plants and preventing negative impacts on the areas around our sites and containing harm and conduct training accordingly. In addition, we are advancing measures to deal with natural disasters caused by extreme weather due to climate change.

Focus

Creating People-Friendly Workplaces: Automating Cleaning Operations at the Kagawa Plant

Based on the idea that “Safety lies at the foundation of the company’s very existence, and ensuring safety is the company’s social responsibility,” which is part of its Environment and Safety Principles, MCC strives to create people-friendly workplaces by minimizing operations that are physically or mentally burdensome. To this end, we are advancing facility improvements utilizing AI, IoT, robotics and other cutting-edge technologies.

At MCC’s Kagawa Plant, employees periodically have to clean accumulated grime off of equipment. Previously, employees used tools to directly scrape this grime off of surfaces. Because this work put them in danger of cuts and burns, it was physically and mentally burdensome. To address this, the plant adopted an automated cleaning system that uses robotic arms. This has not only reduced the amount of work presenting significant risk of occupational injury, but enabled the optimization of cleaning conditions, instead of relying on the experience of operators, thereby realizing an improvement in efficiency over manual cleaning.

Risk Assessment

MCC implements robust risk assessments of processes, operations and chemicals, striving to prevent process safety incidents and occupational accidents. In these risk assessments, we comprehensively identify, evaluate and work to reduce risks related to process safety, occupational accidents and health. This includes risks not only under steady conditions, but also unsteady conditions, such as when responding to a problem. Furthermore, to effectively reduce risks related to changes, we use mechanisms for identifying all changes and conduct risk assessments under the supervision of expert technicians.



Process Safety and Disaster Prevention, Occupational Safety and Health

Enhancing Self-Directed Process Safety

MCC's Ibaraki, Mie, Okayama and Hiroshima plants are accredited as having high-level process safety under the High Pressure Gas Safety Act. These plants maintain a high level of process safety by creating mechanisms in line with the requirements for accreditation under the High Pressure Gas Safety Act, such as 1. Process safety management and inspection frameworks, 2. Continuous improvement of process safety systems via PDCA cycles, 3. Risk assessments and 4. Education and training.

In recent years, the variety of accidents is increasing, plant facilities are aging and the number of highly experienced employees is falling. In light of such factors, we are working to further enhance the level of process safety by such means as using IoT and big data technologies, implementing sophisticated risk assessments and receiving third-party process safety assessments.

Working Environment Management

Some employees within the MCC Group perform work that requires occupational health considerations, such as the handling of specified chemical substances and organic solvents and operations performed in hot or noisy conditions. To prevent health problems in these employees, the MCC Group manages working environments based on ongoing working environment measurement performed in accordance with relevant laws and guidelines and its own rules. In addition, MCC carries out a range of occupational health measures, such as implementing specialized health checkups, workplace inspections by industrial physicians and initiatives to reduce risks identified by chemical substance risk assessments.

Focus COVID-19 Infection Prevention Measures During Regular Maintenance at the Ibaraki Plant

MCC's Ibaraki Plant halted normal operations from May 12 to July 4, 2020, for large-scale regular maintenance, comprising facility inspections and repairs. During this time, many individuals from partner companies across Japan were scheduled to come to the plant. In light of this, we worked with Ibaraki Prefecture, Kamisu City and medical professionals to implement thorough measures to prevent infection of COVID-19.

Main anti-infection measures

- Required visitors from contractors to make a log of their body temperature and whereabouts for a period beginning two weeks before their arrival and, prior to entering the plant for the first time, to undergo a medical interview with a doctor.
- Checked individuals' temperature and logs of physical condition and whereabouts when they entered the plant each day.
- Took thorough measures to avoid work in closed spaces, crowding and close contact, such as restricting entry to offices, holding construction-related meetings virtually, improving the efficiency of contractor reception operations by adopting DX technologies, and cancelling morning assemblies.

As a result of these measures, the regular maintenance was completed with zero cases of COVID-19 and zero accidents. The Ministry of Economy, Trade and Industry praised these efforts, saying that "the successful completion of the regular maintenance at the Ibaraki Plant is a model for such regular maintenance nationwide."



Medical interview with a doctor before entering the plant for the first time



Real-time body temperature sensing at the employee entrance gate



Providing instructions remotely using tablets

Human Resource Development Initiatives

MCC implements human resource development using educational plans tailored to specific types of work and levels of seniority.

We carry out education and drills for employees who conduct operations at manufacturing sites to ensure that they can correctly carry out basic practices and operations and follow rules about prohibited behaviors. We also use creative techniques to help employees apply the knowledge gained through education at actual work sites. Furthermore, we carry out experiential education using facilities that provide simulated experiences of process safety incidents and occupational accidents to increase employees' sensitivity to danger.

For technical staff, we also provide chemical engineering education and carry out such initiatives as mandatory participation in safety assessments of processes at their respective work sites. Through such efforts, we are developing chemical process safety engineers with specialized knowledge of chemical substances and reactions and risk assessment methods.

Focus New Education Center at the Fukuoka Plant—Virtual Reality Training System

MCC's Fukuoka Plant established a new education center (completed in January 2020), expanded its practice plant, adopted a virtual reality (VR) training system and set up an area dedicated to keeping the lessons of past accidents fresh. The practice plant enables employees to practice performing plant operations and on-site work (such as replacing pumps and performing work inside tanks), as well as to drill basic operations, such as the handling of tools and correct work posture and position. We expect that it will be very useful for developing plant operators. The VR training system allows employees to virtually experience accidents, such as falls and being caught or entangled in equipment, to heighten their sensitivity to danger and help prevent occupational injuries. The area dedicated to keeping the lessons of past accidents fresh provides information about serious accidents that have occurred at MCC to renew employees' determination to ensure safety.



The new education center



Expanded practice plant



VR training system



Area dedicated to keeping the lessons of past accidents fresh



Process Safety and Disaster Prevention, Occupational Safety and Health

Accident and Natural Disaster Response

MCC has in place a range of countermeasures to minimize and contain harm due to accidents and natural disasters. We evaluate potential external effects, including impact on surrounding areas, and establish response procedures to be implemented in the event of a disaster. We also conduct training based on scenarios in which accidents occur simultaneously at multiple facilities or plants due to large-scale natural disasters or other factors. Through such efforts, we maintain an emergency response system.

■ Earthquake-Resistant High-Pressure Gas Equipment

MCC uses earthquake resistance design standards to evaluate the earthquake resistance of such facilities as spherical storage tanks with welded steel pipe braces and high-pressure gas facilities designated as vital in terms of earthquake-resistant design. Based on such evaluation, MCC has drawn up plans to improve facilities where necessary and is advancing earthquake countermeasures in line with said plans.

(1) Spherical storage tanks with welded steel pipe braces

We have completed earthquake countermeasures for eight of the nine tanks found to require them. The installation of earthquake countermeasures for the remaining tank is currently under way and expected to be completed in fiscal 2020.

(2) High-pressure gas facilities designated as vital in terms of earthquake-resistant design

We have completed earthquake countermeasures for 24 of the 28 facilities found to require them. Earthquake countermeasures for the remaining four facilities are expected to be completed in fiscal 2020.

Focus Countermeasures for Major Earthquakes at the Mie Plant

MCC's Mie Plant has long implemented earthquake countermeasures based on a scenario of an earthquake occurring in the Tokai region. Following the Great East Japan Earthquake, we strengthened and revised countermeasures based on a scenario of a major earthquake in the Nankai Trough, took facility-related measures, revised related manuals and reinforced related drills.